Nine-Nina simulations and predictions over 1983-1993 from Cane and Zebiak's model and satellite observations.

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Anomalies of thermocline depths, SS"1', winds and cloud convection relative to monthly climatology are first simulated with the Cane and Zebiak's model in its uncoupled mode forced by FSU wind anomalies. Simulations arc compared with Geosat sea-level, NOAA/AVHRR SST, FSU winds and ISCCP cloud convection observations. Mode] and data arc in good agreement for sea-level, but mode] fails to simulate SS"1', wind and cloud Nina anomaly in 1988.

SS'1', cloud convection and air-sea heat budgets derived from SSM1 are then used to force the atmospheric part and/or mixed layer part of the model in its uncoupled mode. Simulations are then considerably improved. But used in its coupled mode, discrepancy shows up again because of the importance of the initial conditions in predictions.

Twin experiments are then run to study the impact of initializing predictions with sea-level or with SS'1'. Impact of sca-level on predictions lasts longer than that of SST. Predictions are degraded or improved, depending on the way the coupled model is further corrected or not with extra observations during the predictions.

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